

ORIGINAL ARTICLE

Biological Variations of Seven Clinical Chemistry Analytes and Trolox Equivalent Antioxidant Capacity within Salivary Constituents

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SUMMARY

Background: Data on biological variation in saliva samples are quite limited. This study aimed to obtain well-defined biological variation data for seven common clinical chemistry analytes and Trolox equivalent antioxidant capacity (TEAC) in saliva.

Methods: Unstimulated whole saliva and blood samples were collected from thirty-two healthy volunteers of both genders without any history of disease or metabolic syndrome under standard conditions at six different times within three weeks. The seven clinical chemistry analytes and TEAC, analyzed by photometric methods using automated analyzers, were planned for biological variation analysis. The components of nested analysis of variance were used to perform the biological variation data analysis.

Results: The within-subject and between-subject biological variations (CV_G and CV_I , respectively) for unstimulated whole saliva samples, respectively, were determined to be 19.3% and 25.1% for α -amylase, 25.1% and 51.1% for aspartate aminotransferase, 31.0% and 22.3% for lactate dehydrogenase, 19.0% and 20.8% for uric acid, 16.6% and 23.4% for total calcium, 12.9% and 13.7% for inorganic phosphate, 13.1% and 19.7% for total protein, and 14.9% and 20.0% for TEAC. In addition, the CV_I and CV_G were 3.4% and 6.3% for serum TEAC.

Conclusions: Considering the evidence that saliva samples can be used to diagnose and monitor oral or non-oral diseases, these biological variation data will contribute to how to use subject-based reference values or population-based reference intervals of these analytes and TEAC.

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Supplementary Data

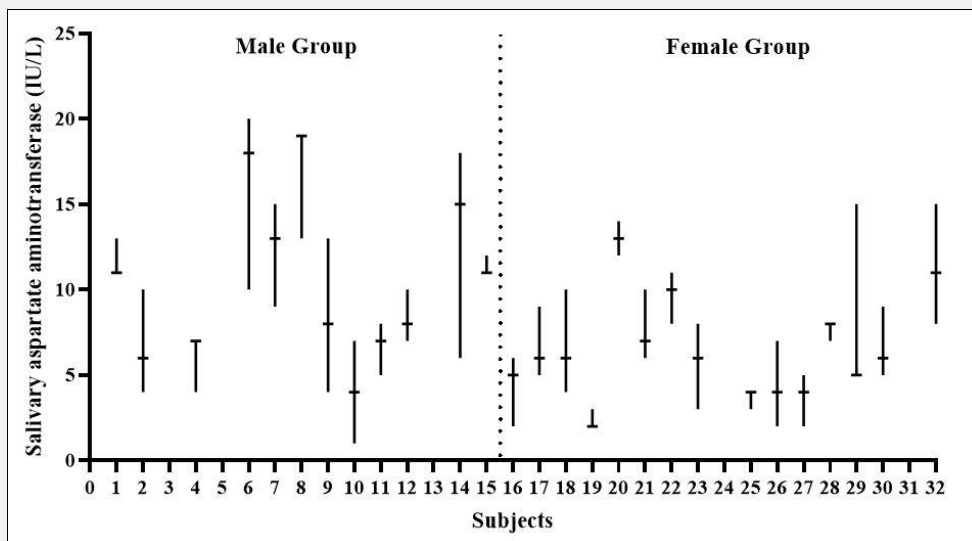


Figure S1. Medians (horizontal bars) and absolute ranges (minimum-maximum) of salivary aspartate aminotransferase for each subject.

The error bar profiles of the 1st, 4th, 8th, 14th, 19th, 25th, 28th, and 29th subjects seem different, since the regular interval is not sufficient, and it is relatively wide. The median (min - max) values of the these subjects were 11 (11 - 13), 7 (4 - 7), 19 (13 - 19), 15 (6 - 18), 2 (2 - 3), 4 (3 - 4), 8 (7 - 8), and 5 (5 - 15), respectively.

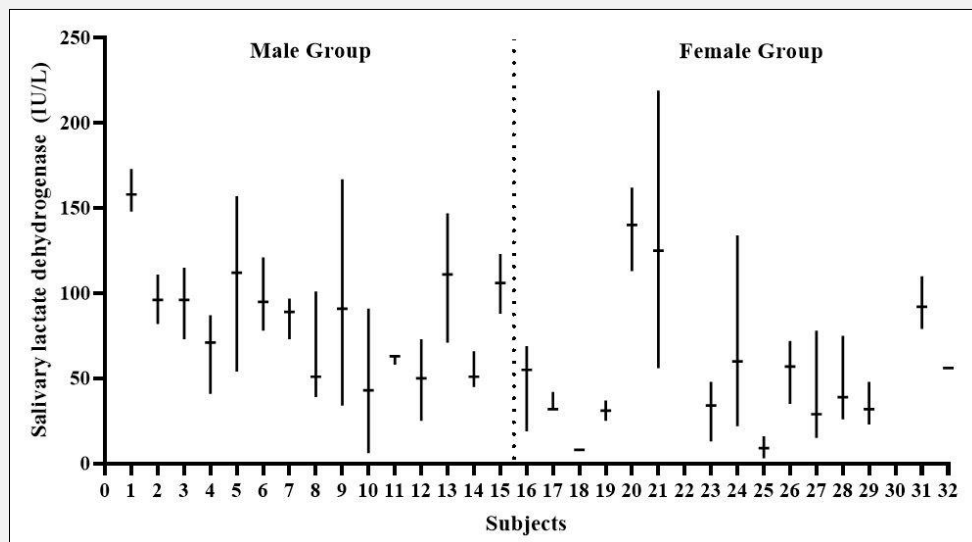


Figure S2. Medians (horizontal bars) and absolute ranges (minimum - maximum) of salivary lactate dehydrogenase for each subject.

The error bar profiles of the 11th, 17th, 18th, and 32nd subjects seem different, since the regular interval is not sufficient, and it is relatively wide. The median (min - max) values of the these subjects were 63 (58 - 66), 32 (29 - 42), 8 (6 - 9), and 56 (54 - 59), respectively.

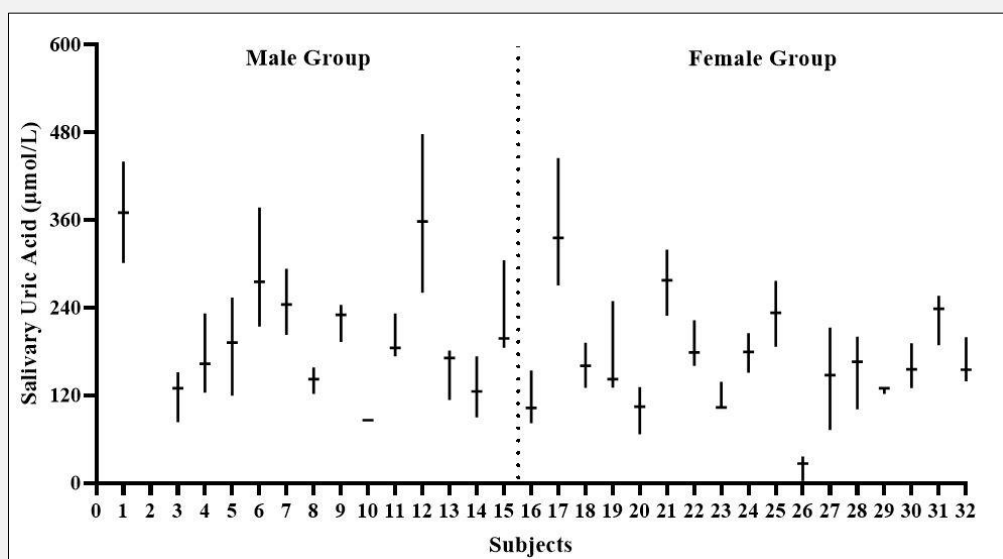


Figure S3. Medians (horizontal bars) and absolute ranges (minimum - maximum) of salivary uric acid for each subject.

The error bar profiles of the 10th, 23rd, and 29th subjects seem different, since the regular interval is not sufficient, and it is relatively wide. The median (min - max) values of the these subjects were 86.2 (80.9 - 92.2), 103.5 (101.1 - 138.6), and 129.7 (121.9 - 135.0), respectively.

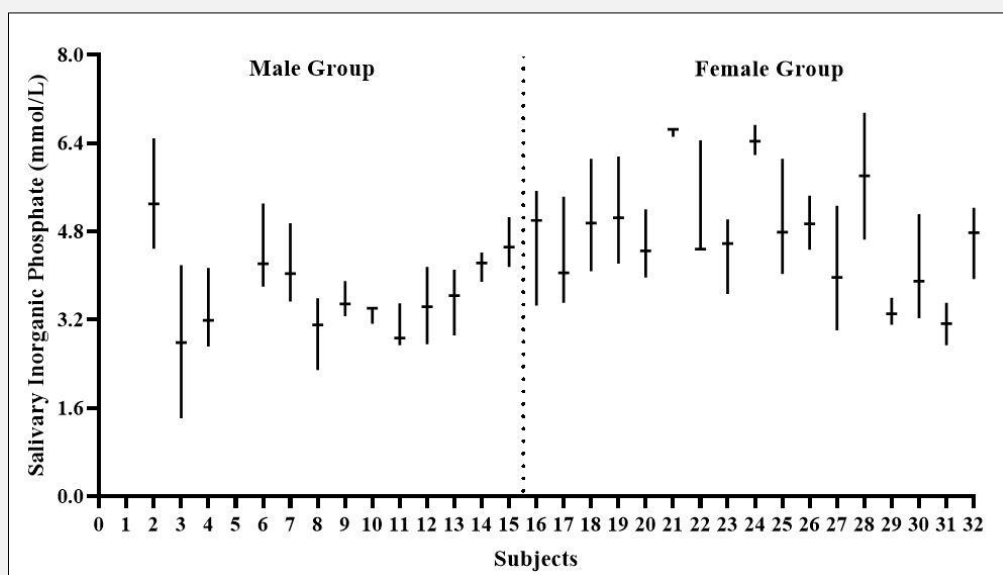


Figure S4. Medians (horizontal bars) and absolute ranges (minimum - maximum) of salivary inorganic phosphate for each subject.

The error bar profiles of the 10th, 21st, and 22nd subjects seem different, since the regular interval is not sufficient, and it is relatively wide. The median (min - max) values of the these subjects were 3.41 (3.13 - 3.46), 6.65 (6.52 - 6.67), and 4.48 (4.47 - 6.45), respectively.

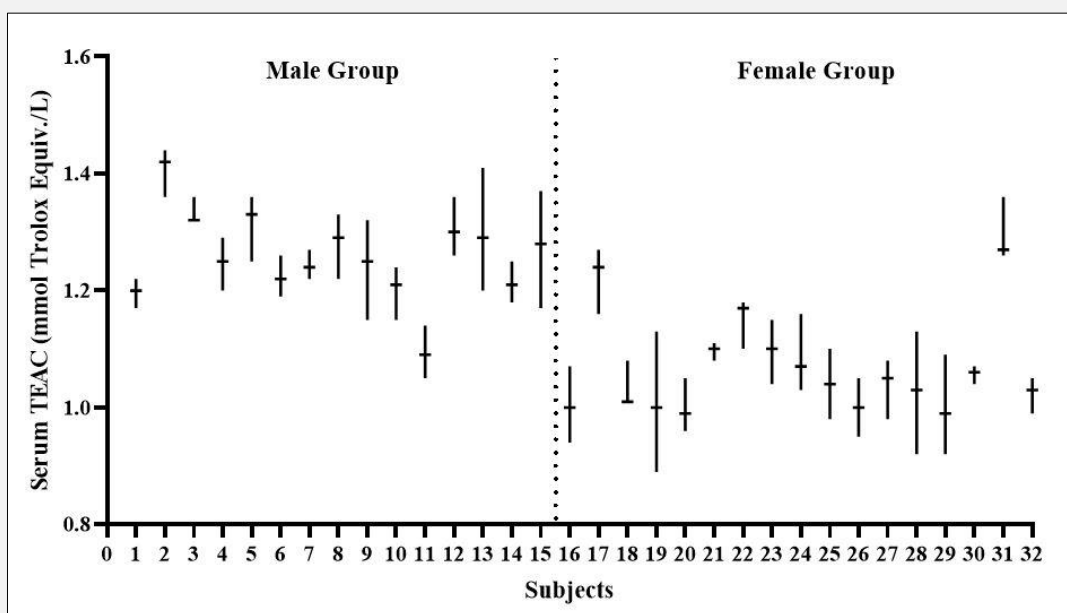


Figure S5. Medians (horizontal bars) and absolute ranges (minimum - maximum) of serum TEAC for each subject.

The error bar profiles of the 3rd and 18th subjects seem different, since the regular interval is not sufficient, and it is relatively wide. The median (min - max) values of the these subjects were 1.29 (1.22 - 1.33) and 1.01 (1.01 - 1.08), respectively.